National Institute of Environmental Health Sciences

Winter mortality modifies the heat-mortality association the following summer

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Abstract:

The present study aimed to investigate how the heat-related increase in deaths in summer and the extent of mortality displacement depend on influenza and other categories of mortality in the previous winter, which when low leaves a greater pool of susceptible individuals. Mortality data from Stockholm, Sweden, from 1990-2002 were stratified into a summer period and a winter period. A Poisson regression model was established for the daily mortality in the summer, with temperature and confounders as explanatory variables. In addition, indicators of total, respiratory, cardiovascular and influenza mortality of the winter period were incorporated as effect modifiers in the summer model, and lagged effects in strata defined by indicators were studied. A high rate of respiratory as well as cardiovascular mortality in winter reduced the heat effect the following summer, and influenza mortality tended to do so as well. The cumulative effect per °C increase was 0.95% below and 0.89% above a threshold (21.3° C) after a winter with low cardiovascular and respiratory mortality, but -0.23% below and 0.21% above the threshold after a winter with high cardiovascular and respiratory mortality. The current study shows that high respiratory, cardiovascular and influenza mortality in winter leads to lower temperature effects in the following summer. It also suggests that persons for whom influenza may be fatal are often also susceptible to heat and this subgroup might, therefore, not benefit as much as expected from influenza vaccinations. Copyright © ERS Journals Ltd 2009.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Cold, Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Sweden

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Infectious Disease, Injury, Morbidity/Mortality, Respiratory Effect

Infectious Disease: Airborne Disease

Airborne Disease: Influenza

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content